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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/690,510 | 10/23/2003 | Yuan Liang Yu | MR2349-790/DIV | 6054 |
| 4586 | 7590 | 12/29/2005 | EXAMINER | |
| ROSENBERG, KLEIN & LEE 3458 ELLICOTT CENTER DRIVE-SUITE 101 ELLICOTT CITY, MD 21043 | | | AFTERGUT, JEFF H | |
| | | | ART UNIT | PAPER NUMBER |
| | | | 1733 | |
| DATE MAILED: 12/29/2005 | | | | |

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------------|---------------------------------------|--|
| Office Action Summary | Application No. 10/690,510 | Applicant(s) YU, YUAN LIANG | |
| | Examiner Jeff H. Aftergut | Art Unit 1733 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 5-8 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 5-8 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 5-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the admitted prior art in view of any one of Macfee, Jr. et al, Krueger or Ford further taken with Landrock (Processing Handbook on Surface Preparation for Adhesive Bonding) and Vargas et al.

The admitted prior art suggested that it was known at the time the invention was made to attach a nut to a plate wherein the substrate the nut was being attached to was a metal surface. The attachment operation was performed with either a welding operation or a brazing process. The prior art failed to teach that those skilled in the art would have incorporated an adhesive to join the nut to the plate.

However, it was well known as evidenced by any one of Macfee, Jr. et al, Krueger or Ford to incorporate an adhesive to join a nut to a plate. More specifically, the references suggested that one skilled in the art would have known to incorporate a double sided pressure sensitive adhesive tape between a nut and/or nut plate and a surface it was intended to be bound to. More specifically, Macfee et al suggested that an adhesive layer 12 was a double sided pressure sensitive tape which was used to secure the nut plate to the substrate. Krueger suggested that it was known to secure a flanged nut 24 onto a surface of another substrate with the use of a foam layer 3 which

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included a coating of pressure sensitive adhesive thereon on each side. The reference to Ford suggested that it was known at the time the invention was made to utilize an adhesive 30 on a nut plate to secure the plate to a substrate wherein the adhesive 30 was a double sided pressure sensitive adhesive material. The references all envisioned that one skilled in the art would have utilized an adhesive material to join a nut to a substrate. The references failed to teach that one would have prepared the surfaces for bonding which included removal of scum from the surfaces of the metal prior to bonding and/or anodizing the metal surfaces. Additionally, while the references each suggested that those versed in the art would have been aware of the use of pressure sensitive adhesive materials for joining the nut to the substrate, the references did not envision a heat treatment on the surface to join the materials together.

The reference to Landrock suggested that those skilled in the art of adhesive bonding would have understood to remove scum from the surface of the aluminum prior to the bonding operation wherein the pretreatments performed upon the metal prior to the bonding operation included the use of a grit blasting operation, see pages 14-20 of the document where various sanding operations were performed (note that grit blasting and/or hand abrading the surface were known polishing operations). Certainly one skilled in the art would have understood that both the metal of the nut and the metal of the substrate plate would have been pretreated with the polishing operation in order to ensure that the finished assembly formed a good bond. The references nonetheless failed to teach that those skilled in the art would have incorporated a step of heating to

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cure the adhesive as the adhesive employed in the operations included pressure sensitive adhesives.

However, it was known at the time the invention was made to employ a double sided adhesive which incorporated a structural thermosetting adhesive therein wherein one initially assembled the layers together with the pressure sensitive adhesive of the double sided adhesive followed by a heat treatment in order to cure the structural adhesive therein in order to provide a stronger more secure joint between the two elements being adhered together as suggested by Vargas et al. More specifically, the reference suggested that those versed in the art would have understood that structural adhesives which were cured with heat (thermosetting adhesives) did not have good tack initially and therefore one skilled in the art would have provided a double sided tape with a coating of pressure sensitive adhesive on either side of the core of thermosetting material. It would have been understood that the use of the structural adhesive would have provided a superior bond once the material was cured. Note that in Vargas the adhesive material was cured with the application of heat. It would have been obvious to one of ordinary skill in the art at the time the invention was made to employ the techniques of Vargas et al for the pressure sensitive adhesive tape employed in the processing of joining a nut to a plate as suggested would have been useful by any one of Macfee, Jr. et al, Krueger or Ford as the adhesive provided a superior bond subsequent to cure of the structural adhesive wherein prior to the bonding operation one skilled in the art would have incorporated a step of pretreating the surfaces prior to the joining with the adhesive (as such would have promoted a stronger bond) as

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suggested by Landrock in the process of attaching a nut to a plate as taught by the admitted prior art.

With regard to claims 6 and 7, note that the reference to Landrock suggested the identified polishing operation prior to bonding with aluminum surfaces. Regarding claim 8, while Vargas did not identify the specific curing treatment, the temperature was a function of the adhesive material selected for the operation and would have therefore been determined based upon the same as a result effective variable. One skilled in the art would have been expected to determine the optimum curing temperature through routine experimentation.

Conclusion


3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hutter et al suggested that those skilled in the art would have utilized a curable adhesive to join a nut plate to a substrate.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeff H. Aftergut whose telephone number is 571-272-1212. The examiner can normally be reached on Monday-Friday 7:15-345 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on 571-272-1226. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Jeff M. Aftergut
Primary Examiner
Art Unit 1733

JHA
December 23, 2005